

Description of *Eocollis catostomi* sp. n. (Acanthocephala: Neoechinorhynchidae) from Two Species of Suckers (Catostomidae) in Alabama, with Comments on *Eocollis arcanus*

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ABSTRACT: *Eocollis catostomi* sp. n. is described from *Minytrema melanops* (Agassiz) and *Moxostoma poecilurum* (Jordan) in Alabama. *Eocollis catostomi* is distinguished from *E. arcanus* by having a more cylindrical trunk; longer proboscis hooks in anterior (71–81 [74] μm), middle (45–55 [49] μm), and posterior (24–28 [26] μm) circles; larger proboscis receptacle (273–395 [335] μm); lemnisci markedly unequal in length; an unelevated female genital pore; and wider eggs (24–26 [25] μm) that lack tubelike structures in the middle membrane. This is the first report of *Eocollis* from catostomid fishes in North America. *Eocollis arcanus* is reported from fishes collected in Alabama, Louisiana, and Mississippi. Also, the existence of a protuberance elevating the female genital pore and a middle egg membrane having tubelike structures is reported for *E. arcanus*.

KEY WORDS: *Eocollis catostomi* sp. n., *Eocollis arcanus*, Acanthocephala, Catostomidae, fish parasites, Alabama.

Two species of *Eocollis* Van Cleave, 1947, have been described: *E. arcanus* Van Cleave, 1947, from the United States and *E. harengulae* Wang, 1981, from China. Since its description from *Lepomis macrochirus* and *Pomoxis nigromaculatus* in the Ohio River and southern Illinois (Van Cleave, 1947), *E. arcanus* has been reported from *L. macrochirus* in Alabama (Williams and Rogers, 1982); *L. macrochirus* and *Pomoxis annularis* in Illinois (Lincicome, 1949); *L. macrochirus* in Louisiana (Arnold et al., 1968); and *Chaenobrytus coronarius*, *Lepomis cyanellus*, *L. macrochirus*, *P. nigromaculatus*, and *P. annularis* in Texas (Meade and Harvey, 1968; Meade and Bedinger, 1972).

During examination for acanthocephalans from fishes collected in the southeastern United States, I collected *E. arcanus* from several species of centrarchids in 3 states. Study of these specimens along with 10 paratypes (USNM Helm. Coll. No. 37666) provided information on the position of the female genital pore and the shape of the eggs not reported in the original description. I also collected females of an undescribed species of *Eocollis* from 2 species of catostomids collected in Alabama. This species is here described. This is the first report of *Eocollis* from catostomid hosts in North America.

Materials and Methods

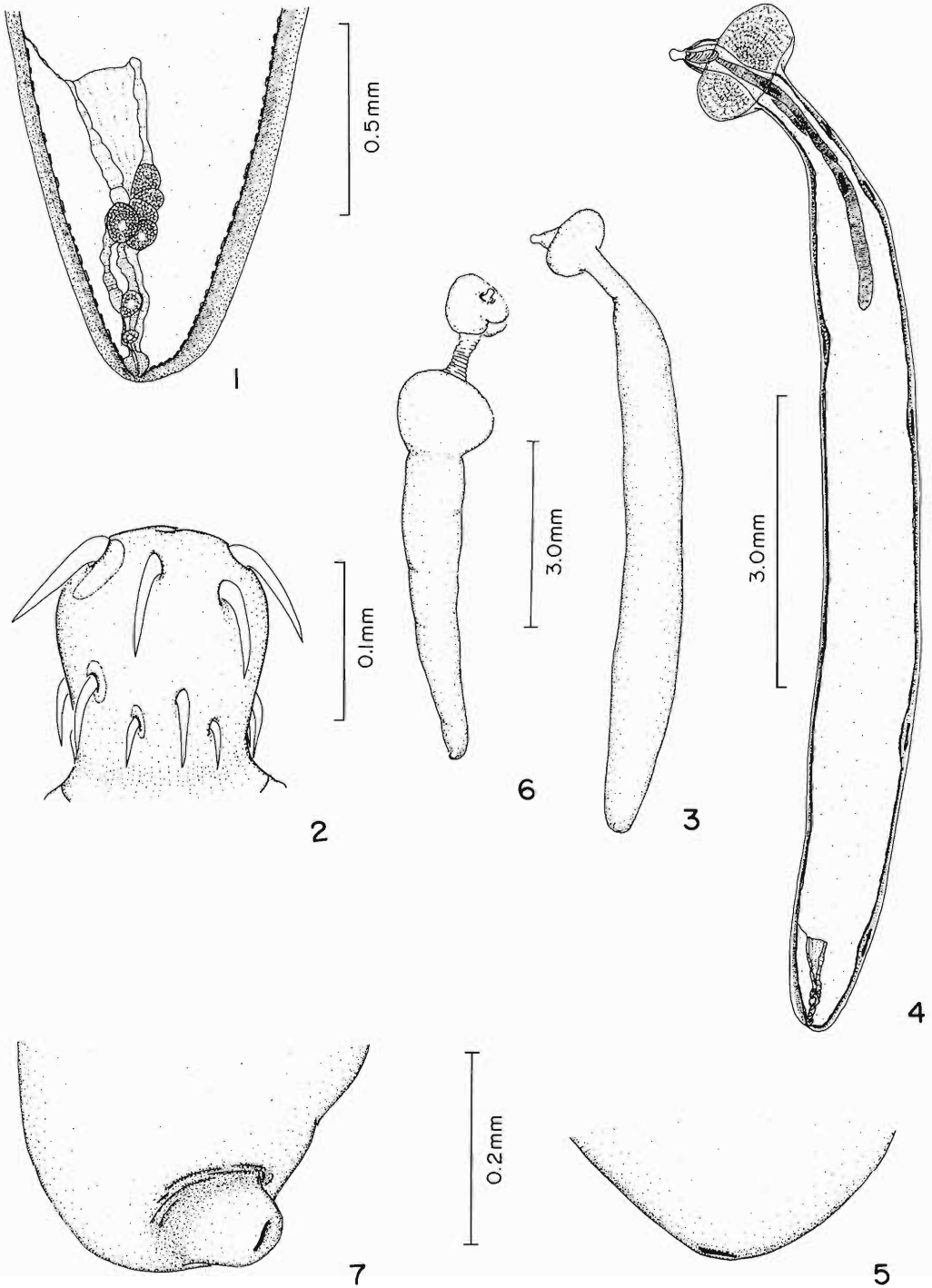
Fish were collected by trammel net or seine, kept in iced water, and examined within 24 hr of collection. Acanthocephalans were placed in distilled water to

evaginate the proboscides and then fixed in alcohol-formaldehyde-acetic acid (AFA). Specimens were stained with Mayer's alum carmine, dehydrated, cleared in xylene, and mounted in Canada balsam. The description is of gravid females. Mature eggs are considered to be those with fully formed acanthors. Line drawings were prepared with the aid of a drawing tube. All measurements, unless otherwise noted, are in micrometers, with averages in parentheses.

Eocollis arcanus Van Cleave, 1947 (Figs. 6, 7, 11–13)

Eocollis arcanus was collected from *Pomoxis nigromaculatus* in Humphrey County, Mississippi; *Lepomis cyanellus* and *Lepomis marginatus*, in LeFlore County, Mississippi; *Lepomis macrochirus* in Washington Parish, Louisiana, and Choctaw and Dallas counties, Alabama; and from *Centrarchis macropterus* in Sumter County, Alabama. Of the 8 specimens collected, all were immature except for 1 female from *L. macrochirus* in Louisiana and 1 male from *L. macrochirus* in Alabama. The general body shape and sizes of proboscis hooks of these specimens agree with the original description of *E. arcanus*.

Van Cleave (1947) gave dimensions of "embryos within the body cavity" of *E. arcanus* as being 41 to 47 long by 10 wide but did not provide further description or an illustration of the eggs. Eggs were teased from the body cavity of the 1 mature female from the present collection. Most of these eggs were nearly mature and were within the reported size range. The middle membrane at the ends of the embryo in the nearly



Figures 1–7. 1–5. *Eocollis catostomi* sp. n. holotype female. 1. Posterior end. 2. Proboscis. 3. Surface view. 4. Outline. 5. Surface view of posterior end. 6, 7. *Eocollis arcanus* paratypes. 6. Surface view of female. 7. Surface of posterior end of female. Scale between Figures 6 and 3 applies to both.

mature eggs (Fig. 11) was terminally constricted giving the appearance of polar protrusions. Mature eggs were 43–50 (47) long by 12–15 (13) wide ($N = 12$). These dimensions are slightly larger than the measurements originally reported and measured from examined paratypes. The polar protrusions were not seen in these mature eggs; the middle membrane was much thicker and contained tiny tubelike structures oriented perpendicularly to its surface (Figs. 12, 13). Eggs of paratypes were examined and measured. Most of these eggs appeared to have the polar protrusions. The egg membranes of many exhibited an opacity pattern suggestive of tubelike structures but might be an artifact of the age and shrinkage of specimens.

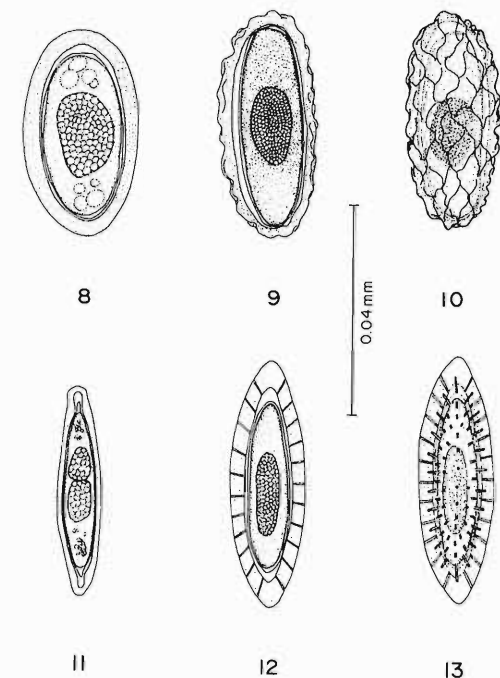
Female paratypes had a distinct genital protuberance not reported by Van Cleave (1947). This structure (Fig. 7), evident in all but the most contracted specimens, terminates with the genital pore. The immature females from the present collection did not show this structure and the posterior end of the 1 mature female was so contracted as to obscure its presence.

SPECIMEN DEPOSITION: The following voucher specimens of *E. arcanus* are deposited in the University of Nebraska State Museum's Harold W. Manter Laboratory Collection: 2 immature females from *L. marginatus* in Mississippi (HWML No. 34189), 1 mature female from *L. macrochirus* in Louisiana (HWML No. 34188), 1 immature female from *Centrarchis macrop-terus* (HWML No. 34190) in Alabama, and 1 mature male from *L. macrochirus* (HWML No. 34187) in Alabama.

Description

Eocollis catostomi sp. n. (Figs. 1–5, 8–10)

FEMALES (based on 32 gravid specimens): With characteristics of the genus *Eocollis*. Trunk (inclusive of trunk bulb and false neck) 5.7–15.0 (9.6) mm long. Trunk bulb 338–675 (518) long by 600–1,425 (1,083) wide. False neck 425–1,763 (938) long (measured from base of trunk bulb to point where body wall enlarges to form main trunk) by 213–450 (286) wide at narrowest point. Trunk proper nearly cylindrical, 525–1,650 (1,061) wide. Dorsal and ventral body wall about equal in thickness. Proboscis slightly longer than wide, 104–130 (119) long ($N = 11$) by 108–133 (109) wide ($N = 17$). Neck 31–40 (35) long by 92–124 (109) wide. Apical organ 97–111 (106)



Figures 8–13. 8–10. Eggs of *Eocollis catostomi* sp. n. 8. Immature egg outline. 9. Mature egg. 10. Surface of mature egg. 11–13. Eggs of *Eocollis arcanus*. 11. Nearly mature egg. 12. Mature egg. 13. Surface of mature egg.

long. Proboscis hooks in anterior circle 71–81 (74) long by 12–17 (14) wide, in middle circle 45–55 (49) long, in posterior circle 24–28 (26) long. Proboscis receptacle 273–395 (335) long by 97–164 (118) wide. Lemnisci unequal in length; uninucleate lemniscus 55–97% (70%) of binucleate lemniscus length. Uninucleate lemniscus 956–1,963 (1,444) long, occupying 10–22% (15%) of trunk length; binucleate lemniscus 1,258–3,050 (2,160) long, occupying 11–33% (23%) of trunk length. Reproductive system 476–967 (744) long, occupying 7–11% (8%) of trunk length; uterus length variable depending on state of contraction, 62–484 (217); vagina 116–236 (173) long. Genital pore terminal, surrounding tegumental area unmodified. Mature eggs teased from the body cavity of mounted specimens ovoid with a wrinkled surface; 43–50 (48) long by 24–26 (25) wide.

MALES: Unknown.

Taxonomic summary

TYPE HOST: Spotted sucker, *Minytrema melanops* (Rafinesque) (Catostomidae).

OTHER HOST: Blacktail redhorse, *Moxostoma poecilurum* (Jordan) (Catostomidae).

SITE OF INFECTION: Intestine.

TYPE LOCALITY: Grinlin Lake, an oxbow lake off the Sucarnoochee River near its confluence with the Tombigbee River, east of Bellamy, Sumter County, Alabama, R1W T17N, Sec. 26, 10 April 1981.

SPECIMEN DEPOSITION: Holotype female, United States National Museum Helminthological Collection (USNM Helm. Coll.) No. 82068. Paratype females, USNM Helm. Coll. No. 82069 and HWML Coll. No. 34186. Other paratypes retained by the author.

ETYMOLOGY: The name *catostomi* refers to the family of piscine hosts.

Remarks

Eocollis catostomi is readily distinguished by having proboscis hooks much larger than those originally reported for *E. arcanus* (anterior circle 47–59 long and 6 thick, middle circle 23 long, and posterior circle 12 long). Also, *E. arcanus* has a smaller proboscis receptacle (80–210 long for 50–67 wide) and slightly shorter proboscis (76–117). The trunk proper of *E. catostomi* is nearly cylindrical, lacking the pronounced anterior expansion evident in *E. arcanus* (Figs. 3, 6). The lemnisci of *E. catostomi* are typically unequal in length, whereas those of *E. arcanus* are nearly equal in length. The eggs of *E. catostomi* are wider than those originally described for *E. arcanus* (41–47 by 10) and those observed by the author (43–50 by 12–15). The posterior end of female *E. catostomi* lacks the distinct genital protuberance observed in female paratypes of *E. arcanus* (Figs. 5, 7).

Eocollis catostomi also appears to differ from *E. arcanus* in host specificity. *Eocollis arcanus* is known only from centrarchid fish hosts, whereas *E. catostomi* was collected only from catostomid fishes, *Minytrema melanops* (5 spec-

imens) and *Moxostoma poecilurum* (5), all fish infected. None of 11 other species of fish from 4 other families collected at the type locality of *E. catostomi* was found infected with this acanthocephalan. These piscine species (number examined in parentheses) include Centrarchidae: *Lepomis gulosus* (1), *L. macrochirus* (1), *L. megalotis* (3), *L. microlophus* (20), *Micropterus salmoides* (6), *Pomoxis annularis* (4), *P. nigromaculatus* (5); Ictaluridae: *Ictalurus natalis* (10), *I. nebulosus* (3), *I. punctatus* (1); and Scianidae: *Aplodinotus grunniens* (1).

Acknowledgment

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